CLAIMS

1. An oil lubricated rolling bearing device comprising:

an inner ring;

an outer ring;

a plurality of rolling elements placed between the inner ring and the outer ring; and

an oil inflow suppression member that suppresses oil inflow between the inner ring and the outer ring.

2. The oil lubricated rolling bearing device as claimed in claim 1, wherein

the rolling elements are tapered rollers,

the inner ring is a rotating ring that has a tapered raceway surface, and the outer ring is a fixed ring that has a tapered raceway surface,

the inner ring has a flange portion brought in contact with minor diameter end surfaces of the tapered rollers,

the oil inflow suppression member is a shield plate having a protrusion that protrudes radially outwardly of the flange portion,

the device further comprises a retainer that retains the tapered rollers, and

the protrusion is placed in a place having an interval from the retainer in an axial direction of the inner ring.

3. The oil lubricated rolling bearing device as claimed in claim 2, wherein

the protrusion has an outside diameter that is not greater than an inside diameter of an end portion on a minor diameter side of the tapered raceway surface of the outer ring.

4. The oil lubricated rolling bearing device as claimed in claim 2, wherein

a gap in the axial direction between the protrusion and the retainer is not greater than 3 mm.

5. The oil lubricated rolling bearing device as claimed in claim 2, wherein

the inner ring and the shield plate are integrally formed.

6. The oil lubricated rolling bearing device as claimed in claim 1, wherein

the rolling elements are tapered rollers,

the inner ring is a rotating ring that has a tapered raceway surface, and the outer ring is a fixed ring that has a tapered raceway surface,

the oil inflow suppression member is a shield plate having a protrusion that protrudes radially inwardly of an end portion on a minor diameter side of the tapered raceway surface of the outer ring,

the device further comprises a retainer that retains the tapered rollers,

the protrusion is placed in a place having an interval from the retainer in an axial direction of the outer ring, and

a gap in the axial direction between the protrusion and the retainer is not greater than 3 mm.

7. The oil lubricated rolling bearing device as claimed in claim 6, wherein

the outer ring and the shield plate are integrally formed.

8. The oil lubricated rolling bearing device as claimed in claim 1, comprising:

an oil outflow promotion structure for promoting outflow of oil that enters between the inner ring and the outer ring.

9. The oil lubricated rolling bearing device as claimed in claim 8, wherein

the rolling elements are tapered rollers, and

assuming that a number of the tapered rollers is z, a mean diameter of the tapered rollers is DW and a pitch circle diameter of the tapered rollers is dm,

the device comprises an arrangement structure in which the z tapered rollers that satisfies the following expression:

$$z \leq 0.85/(DW(\pi \cdot dm))$$

are arranged between the inner ring and the outer ring with a major diameter side of the tapered rollers facing toward an oil outflow side.

10. The oil lubricated rolling bearing device as claimed in claim 8, wherein

the rolling elements are tapered rollers, and

the oil outflow promotion structure comprises the tapered raceway surface of the outer ring set in contact with the tapered rollers at a contact angle of not smaller than 25°.

11. The oil lubricated rolling bearing device as claimed in claim 8, wherein

the oil inflow suppression member comprises a member that partially blocks an opening located between the inner ring and the outer ring on an oil inflow side, and the oil outflow promotion structure comprises a member that extends along an oil outflow direction on an oil outflow side.

12. The oil lubricated rolling bearing device as claimed in claim 9, wherein

at least one of an end surface on the major diameter side of the tapered rollers and an end surface of a flange portion that is provided on a major diameter side of a tapered raceway surface of the inner ring and brought in contact with the end surface on the major diameter side of the tapered rollers is coated with a hard coating.

13. The oil lubricated rolling bearing device as claimed in claim 10, wherein

at least one of an end surface on the major diameter side of the tapered rollers and an end surface of a flange portion that is provided on a major diameter side of a tapered raceway surface of the inner ring and brought in contact with the end surface on the major diameter side of the tapered rollers is coated with a hard coating.

14. The oil lubricated rolling bearing device as claimed in claim 8, wherein

the rolling elements are balls, and

the oil outflow promotion structure includes a portion of a shape that widens toward an oil outflow side in cross section on an inner peripheral surface of the outer ring.

15. The oil lubricated rolling bearing device as claimed in claim 14, wherein

at least one of the raceway surfaces of the inner ring and the outer ring and the balls is coated with a hard coating.